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INTERPRETATION FOR HANDICAPPED PERSONS

JACQUE BEECHEL

A HANDBOOK FOR OUTDOOR RECREATION PERSONNEL

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A Handbook for Outdoor Recreation Personnel

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PART I. INTERPRETATION

FUNCTION

The function of interpretation in outdoor recreation is to enrich the visitor's experience and facilitate preservation of the resource. It can enrich the visitor's experience by:

1. alerting him to what is available in the area,

2. giving him an understanding and appreciation of the special history or features of the area,

3. arousing interest in new subjects, or

4. stimulating further exploration of old interests.

It can facilitate preservation by:

1. directing visitor use patterns,

2. promoting an understanding of what part the resource plays in the visitor's life,

3. explaining why and how the resource should be preserved,

4. providing an explanation of who the managing agency is, what it does, and what its objectives and policies are.

A National Park Service administrative manual explains the function of interpretation most succinctly: "Through interpretation, understanding; through understanding, appreciation; through appreciation, protection."

DEFINITION

Most interpreters have their own variation of the definition of interpretation and a representative sample can be found in Sharpe (forthcoming, John Wiley), and in Tilden (1967). (For another thorough treatment of interpretation, see Brown, 1971). Basically, interpretation is the communication of information about our natural, cultural, human and scientific heritage. It has traditionally been provided at parks, historical sites and museums by naturalists, historians and other specialists.

Interpretation is usually presented through the use of personal talks, recorded messages, printed material, films, displays, demonstrations, dioramas, maps, signs, electronic devices, and the items being interpreted. Such interpretive tools are used at visitor centers, museums, amphitheaters, information desks, campfires, roadside exhibits, on trails, television, or in classrooms.

EFFECTIVENESS

The traditional methods of interpretation have placed most of the emphasis on presentation. Of late, there has been a questioning of the success of traditional interpretation--is it producing the desired effect? To be effective, interpretation should be designed so as to be appealing to each visitor, and to communicate in a manner that is understandable by each visitor. Interpreters are starting to put more emphasis on involvement. This change in approach is based on the premise that involvement is more conducive to understanding. In addition, interpretation that relies on involvement of the visitor can be tailored to suit the visitor.

In order to make this new approach effective, we must know who the visitors are. Most of today's interpretation assumes a relatively homogeneous audience with similarities in age, area of origin, native language, educational background, cultural background, beliefs, interests, mental capacities, physical capacities, and recreational goals.

Which visitors are not being considered in such interpretation? Elderly persons, the young, people from foreign countries, the highly educated and the under-educated, ethnic minorities, and physically or mentally handicapped persons are some of the visitors whose needs are not served by such interpretation.

It is part of that group to which this study has been addressed--the physically or mentally handicapped person. What special characteristics must be considered in order to provide effective interpretation for a person handicapped physically or mentally?

PART II. HANDICAPPED PERSONS

Who are the handicapped? They are people who, through congenital defect, disease, infection, cultural or environmental deprivation, or accident, have lost the use of some part of their bodies or some of their sensory faculties. For purposes of this study, I have addressed only the handicaps of blindness, deafness, deaf-blindness, mental retardation and ambulatory limitations.

Because people have some physical or mental impairment does not mean that their needs for, or abilities to benefit from, outdoor recreation are impaired. The benefits of outdoor recreation for these people are the same as they are for anyone: change of environment, introduction to new knowledge, stimulation to pursue new interests, relaxed social interaction that can possibly lead to a greater understanding between different types of people, and a pushing outward of the boundaries of their particular worlds.

While the benefits are the same, the need for these benefits may be greater among the very people who cannot engage in outdoor recreation because their needs have not been met. Those who have some physical or mental impairment are quite often underdeveloped socially, physically, mentally or culturally due to a lifestyle that has been restricted partly by the impairment and partly by a world that has not been designed for them. Any effort to ease the latter restrictions will contribute to the easing of the former restrictions by allowing these people greater self-development.

Following is an introduction to the handicaps, including descriptions and misconceptions. Also included are hints for interpreters about necessary modifications in interpretive programs, for, while the benefits are the same as those for non-handicapped persons, the ways of achieving them are necessarily different. The lack of any major problems should make it apparent that few modifications in design policies are necessary when considering handicapped people's needs. Most handicapped persons need no pampering; they are quite capable of handling any situation that is safe for the non-handicapped user.

BLINDNESS

Facts

Definition

In the definition adopted by the American Medical Association in 1934, "a person is said to be legally blind if he can see no more at a distance of 20 feet than a person with normal sight can see at a distance of 200 feet (20/200 corrected vision), or if the angular distance of the visual field is 20 degrees or less." (Normal vision takes in an angle of 60 to

70 degrees.) The American Foundation for the Blind terms "blind" only those with a complete loss of sight; all other degrees are termed "visually impaired." Of the blind population, about 3 out of 10 are totally blind or have only light perception; the rest have varying amounts of vision.

How Many People Suffer from Blindness?

In 1970, there were 6.4 million visually impaired people in the United States (Goldish, 1971).

What Causes Blindness?

Blindness can be caused by glaucoma, diabetes mellitus, cataract, vascular disease, prenatal influence, poisoning, eye injury, infection and several other diseases. The rate of blindness increases with age: approximately 47 percent of the legally blind are 65 years of age or older, 29 percent are between the ages of 40 and 64, 13 percent are between the ages of 20 and 39, and 10 percent are under 20 years of age (National Society for the Prevention of Blindness, 1966).

How Does Blindness Affect Living?

M. C. Migel, first president of the American Foundation for the Blind, once said: "It is the blindness of ourselves and not the blindness of blind people that makes life difficult for them" (A.F.B., Services for the Blind Person, 1971). Blindness is the physical loss of sight. Nothing more is lost, no other physical ability nor mental capacity. Usually the emotional stability is also intact, though the degree of adjustment to the loss determines the degree of emotional stability. The Washington State Association for the Blind feels that blindness, rather than being a handicap, "is a physical nuisance." Given the proper training and opportunity, the blind person will lead his life as independently and as usefully as will anyone. Most blind people do not want special treatment; they are being trained to live in a world that is not specially designed for them. They want the same full experiences that other people have. They are being taught the use of the long cane to aid mobility. Guide dogs are used by some. Many of the visually impaired are partially sighted and can read signs in large print (18 points or larger).

What is Braille?

Named for Louis Braille, a blind French boy who in 1824 devised the system, Braille is a system of six raised dots arranged in a cell as 1-2-3 downward on the left and 4-5-6 downward on the right. Sixty-three different characters (letters, numbers, punctuation marks, short words and combinations of letters) are possible with various combinations and positions of the dots. There are several grades of Braille. In Grade 1, the characters have a one-to-one relationship to the alphabet with no contractions. Each grade has more contractions and short-form words. Grade 2 is most commonly used. It has close to 200 contractions and abbreviated words. Braille can be read at an average of 104 words per minute (about half as fast as the average sighted person reads regular print), though the range of speed varies greatly, with some people reading Braille faster than they can talk (Dunham, 1973).

Misconceptions

A Blind Person Learns the Same Way a Sighted Person Does.

For the person who is born blind, learning is different than for the sighted; such a person cannot learn by watching and imitating. He has to listen, touch, and remember. Memory is extremely important for both the person blind at birth and the person blinded later in life.

A Person Who is Blind Develops a "Sixth" Sense.

A sixth sense is not developed. A blind person must develop an alertness much greater than that of a sighted person. As Dickman states: "Experiments have shown that blind persons do indeed identify sounds better than do blindfolded sighted persons--not because they hear better, but because they remember better and have practiced longer" (Dickman, 1972).

If a Person is Blind, He Reads Braille

Only 5 to 10 percent of the people who are blind can read Braille. There are three main reasons: (1) the definition of legally blind, (2) age, and (3) individual circumstances at the onset of blindness.

Definition of legally blind: Because a person sees less at 20 feet than do people with normal vision at 200 feet, or because his vision encompasses only a 20 degree field does not necessarily mean that he cannot see anything. Only 12 percent of the legally blind have light perception only, and an even smaller percentage are totally blind (Rodgers, 1970). Most of the legally blind can still read regular print if it is larger than usual, so they do not need to learn Braille.

Age: Approximately half of the people legally blind are 65 years of age or older. Due to the general deterioration that accompanies old age, such as loss of finger sensitivity, greater fatigue and failing memory, there is little potential among older people for learning Braille.

Circumstances at onset of blindness: Factors such as age, extent of education, type of living habits and type of employment at the onset of blindness can determine whether a person will learn Braille, and how much. Braille is essential if the newly blind person is pre-school age and has most of his learning ahead of him. If the newly blind is in the latter part of his career, he may choose to get along without Braille, or with just enough to play cards or make and read cryptic notes to enable him to follow his main interests. Many people who are blinded in the later stages of their lives elect to use no Braille because it would draw attention to their handicap, and this would damage their self-image. Others do not learn Braille because their financial or geographical circumstances preclude exposure to proper training.

READEX FICHE

Helpful Hints for Interpreters

Do not hesitate to offer help to a blind person. He will let you know if he can manage alone.

If you are not sure how to help, ask him; he is an expert.

Gently touching his elbow will let him know you are addressing him.

Do not touch his cane or dog.

If you are helping him walk, offer him your arm rather than taking his. He can guide by the motion of your body. Try to sense the right speed for him.

When you meet him, say "Hello (his name), it's (your name)." He cannot see who you are.

Let him know when you are approaching and leaving.

Do not address him through someone else such as: "What does he want?" Say to him: "What do you want?"

When seating him, place his hand on the back of the chair or bench. That reference point is the only help he needs.

Go ahead and use words like "see" and "look"; he does.

He does not want pity; he has adjusted to his handicap and would like you to do the same.

Requirements differ for a person who has partial sight and for a person who is totally blind. The person who has partial sight will probably be able to use facilities that have had no modification, as long as safety hazards have been removed and the information is presented either by way of sound or by signs that employ large print. People who are totally blind or whose sight is severely diminished will need information presented by way of sound. Considering the small number of blind people who read Braille, it is difficult to justify the expense of providing it.

How to refer to a blind person can present a problem. Some people prefer "visually handicapped." Dr. Jerome Dunham, director of the Northwest Rehabilitation Center for the Blind, who is himself blind, says that they are using the term "blind" and trying to give it a positive, rather than a negative, connotation (Dunham, 1973). Probably a universal solution will never be achieved and the problem will have to be dealt with on an individual basis. Avoid referring to blind people as "the blind"; it makes them non-persons.

Indicate distances (e.g., from one exhibit to the next) in number of feet, rather than number of steps.

Allow handling of items whenever possible and don't worry about the safety of the items. Blind people are extremely adept and careful with their hands.

Tell blind visitors about their surroundings, e.g., they can't tell that they are about to walk onto a bridge.

DEAFNESS

Facts

Definition

The normal human hearing apparatus in babies has a range of 16 to 30,000 cycles per second (cps) of sound waves. The frequency of the sound waves is what regulates low and high pitch of tones. The range decreases as people grow older so that at teenage the upper limit has decreased to approximately 20,000 cps, at middle age it is around 8,000 cps, and by the time a person has lived for 80 years he probably hears nothing above 4,000 cps. The range of normal conversation is around 500 cps for sounds like "aw," and around 2000 cps for sounds like "s."

Besides having pitch, tones have varying degrees of loudness. This is measured in decibels, the amount of pressure caused by the sound waves. From 4 feet away, a whisper has an intensity of about 30 decibels; normal speech, about 60; and a shout, about 90. These are exponential increases so 90 is much more than 3 times the intensity of 30.

In a test of hearing, a person is considered to have normal hearing if he can detect sound with an intensity of 0-25 decibels in the critical speech frequencies of 500, 1000, and 2000 cps (Harvey, 1974). If the intensity has to be 25-55 before he can hear it, he is considered "hard of hearing." If the intensity has to be 55-75, but he can understand amplified or loud speech, he is also said to be "hard of hearing." If the intensity has to be 55-75, and he relies primarily on his eyes to receive communication, he is probably deaf. If the intensity must be 75 or more decibels before detection, the person is considered profoundly deaf (Vescovi, 1966).

How Many People Suffer From Deafness?

In the United States, there are about 8 million people who are deaf to the point of suffering disability from it. There are approximately 351,000 who suffer profound deafness (Johnson, 1973). (These figures are only estimates--greater accuracy will be possible in 1974 when results will be available from the census taken in 1973 by the National Association of the Deaf.)

What Causes Deafness?

Very simply put, hearing is accomplished by sound waves passing through the outer ear, setting up motion of small bones in the middle ear that

pass the motion to fluid in the inner ear. In turn, the fluid moves tiny hairs on cells causing these cells to generate electrical impulses that are carried by a nerve to the brain. A hearing loss can occur from damage to any of the parts of the apparatus, so that the transmittal of the sound waves or electrical impulses is stopped. Such damage can be caused by an infection, contraction of German measles by the mother during the first three months of pregnancy, congenital problems, scarlet fever, whooping cough, common measles, mumps, meningitis, otitis media, otosclerosis, a blow to the ear, skull fracture, tumors or aging.

How Does Deafness Affect Living?

> The problems of deafness are more complex, if not more important than those of blindness. Deafness is a much worse misfortune because of the loss of the most vital stimulus--the sound of the voice that brings language, sets thoughts astir, and helps us in the intellectual company of man (Helen Keller, London, 1933).

Deafness is a handicap of communication, but it is an invisible handicap. If one is blind, it is usually apparent and when someone interacts with that person, understanding is a part of those dealings. If one speaks to a deaf person, one often feels that the deaf individual is a snob--"The least he could have done was answer me." There is no understanding in these interactions because it is not apparent that the person does not hear. Although thousands of people who are deaf go through college, many of them receiving advanced degrees, many thousands more are kept behind in achievement because the hearing population is not sharing enough responsibility in communication.

Because of the communication problem, a deaf person's education and employment are affected. Less effective education prevents him from achieving the level of employment of which he is potentially capable. As a result, many deaf individuals never progress beyond the level of skilled or semi-skilled laborer.

How do Deaf People Communicate?

The type of communication used by each individual depends partly on his age at the time of onset of deafness. If it was prelingual, his communication handicap is greater (as are usually his adjustment problems) than if it was postlingual. If the onset was postlingual, he will be able to make use of speech-reading more than if it was prelingual. The methods of communication available to deaf people are: speech, speech-reading (or lipreading), reading and writing, fingerspelling, and the language of signs.

Speech: "As a consequence of the difficulties involved in learning to speak when deaf, few persons prelingually deafened, and this comprises 95 percent of the school population, develop speech that can be understood in most social situations" (Vernon, 1970).

Speech-reading: "As 40 to 60 percent or more of the sounds in English are homophenous (i.e., they look like some other sound on the lips), a

person who lacks the language base to fill in the gaps understands very little. In fact, the best speechreaders in a one to one situation only understand 26 percent of what is said. Many bright, otherwise capable deaf children grasp less than five percent" (Vernon, 1970).

Reading and writing: "Thirty percent of deaf children are functionally illiterate, their average gain in reading from 10 to 16 is less than a year, and . . . their command of language expressively and receptively is even below this" (Vernon, 1970). Many deaf persons finish their formal education at age 18 or 19, "reading at fourth grade achievement level or less and expressing themselves similarly" (McClure, 1966). Author's note: In the absence of comparable figures about the hearing population, caution should be used with any application of these figures

Fingerspelling and the Language of Signs: Fingerspelling refers to the use of fingers to form letters with which words are formed (not to be confused with forming the shapes of letters of the English alphabet). Language of Signs refers to the use of the entire hand and arm (often both hands and arms) to relate ideas. People who communicate with sign language think and talk in pictures. There are two Languages of Signs: American Sign Language and Manual English (New Signs). There are certain components that are common to both languages, but the differences are enough to prevent real understanding of one if a person only knows the other. This causes a problem for interpreters or speakers who are addressing a mixed audience, for there is no middle ground that will enable anyone to understand the entire speech.

Some schools are teaching students to use only fingerspelling. That method would equip them with the regular English alphabet so hearing and non-hearing people would have a common foundation for language.

A hearing person can learn the manual alphabet in a period of 15 to 30 minutes. The Language of Signs does not provide such a common ground because there is not a sign for each word, and learning the Language of Signs would take longer for a hearing person.

People who use fingerspelling and/or a language of signs have fewer problems of ambiguity and more success in communication than do those using speech-reading or who attempt to talk. Fingerspelling and/or the Language of Signs are used by the majority of deaf people.

Misconceptions

A Deaf Person is the Least Handicapped of Those Who Have Some Physical or Mental Handicap.

In the National Park Guide for the Handicapped (NPS, 1971), the claim is made that "among the handicapped, the deaf visitor to the parks is probably the least disadvantaged. All . . . exhibits and trails are appropriately signed and marked with interpretive messages. Transcripts of audio programs and lectures have been made in some areas." The apparent assumption is that the deaf person need only read the material and he will have acquired all the information provided. However, the average

deaf person would not be able to understand even these above two sentences in the NPS Guide. Most of his knowledge is related to concrete ideas with very basic terminology. He is unequipped to deal with abstractions. His knowledge of terms is such that it is unlikely that he would be able to fully understand the interpretive signs, let alone a transcript of a lecture.

A Deaf Person is "Dumb" or "Mute."

Deaf people are not "dumb." If a deaf person is also mute, it is caused by a separate problem with the larynx and is not due to the deafness. Given that there has been no brain damage to affect intelligence, they have the same intellectual capabilities as the general population, but most are very under-educated. "A recent research study of deaf students 16 or older revealed that 30 percent of them were functionally illiterate, 60 percent achieved a grade level of 5.3 or lower, and only 5 percent rated tenth grade or better in achievement" (Vernon, 1970).

Why is there such a great disparity between potential and achievement? It is the result primarily of communication difficulties. ". . . in its capacity to help transpose sound waves into spoken language, the hearing apparatus represents man's strongest line of communication with the world in which he lives" (Garrett and Levine, 1965).

Most deaf people do not learn our spoken language because they cannot hear it, and of course this affects their ability to read.

Helpful Hints for Interpreters

Because of the difficulty in communication involved with deafness, deaf people who are on their own tend to stay in a world where they can understand and be understood. That world does not usually include the areas where interpretation is found. This does not mean that they should be ignored when planning interpretation. All of the people consulted who work with deaf persons indicated they thought that participation in outdoor recreation would be extremely beneficial and that deaf people would welcome the opportunity.

However, along with the interest is hesitancy and fear because of the communication problem. The people working with them feel that a program of introduction to the world of outdoor recreation is needed. Interpretation is well suited for such a program, and needs only slight modification to accommodate their special communication needs. These modifications would also accommodate the needs of the deaf person who is part of a family with unimpaired hearing; many of these people already participate in outdoor recreation with the family so have no need for a program of introduction but still have the communication difficulties.

It is possible for deaf people to benefit from interpretation. It just has to be presented in a way that is comprehensible to them, and that is a requirement common to all audiences. There are several programs around the country designed to introduce deaf people to environmental interpretation. In one program, it was found that the most successful approach was to have

staff of the environmental education center work with staff from a special education unit that teaches deaf children. Because the deaf children have such a limited vocabulary, they were first taught the meanings of words such as "animals," "trees," "ground," and "plants." Such concepts had to be constantly taught and reinforced. Then they could move on to slightly more complex subjects such as leaves, differences in trees, rocks and so forth. Eventually they had experienced most of the range of interrelationships involved in an outdoor environment and they had benefitted from, and enjoyed their experience just as much as, if not more than, any other audience (Zolomij, 1973).

In another program, several interpreters have learned enough sign language to present their programs to deaf visitors. They first learned what level and types of concepts were understood, and then reduced their interpretive stories to that level of comprehension (Lewton, 1974).

Sign language takes longer to learn than fingerspelling, but a few simple signs can be learned quickly so that communication in an interpretive setting is possible. If the interpreter would make the effort to learn even fingerspelling, it would make at least some of the interpretive programs available to deaf people. (A brochure describing fingerspelling, "The One-Hand Manual Alphabet," can be obtained from the American Foundation for the Blind, 15 West 16 St., N.Y., NY 10011.)

Films can be made comprehensible to deaf visitors by making an inset in the corner of each frame with a person signing.

DEAF-BLINDNESS

Facts

How Many People Suffer from Both Deafness and Blindness?

A rough estimate of the number of people in the United States who suffer from being deaf and blind is 6,000 children and 15,000 adults (Dunham, 1973).

What Causes Deaf-Blindness?

Much of the deaf-blindness is caused by rubella (German measles) and many children today are deaf and blind as a result of exposure early *in utero* to rubella during the epidemic of 1963-1965.

How Does Being Deaf and Blind Affect Living?

Those who are deaf and blind are the most complexly handicapped--when one is so afflicted, both handicaps are more profound. It is a specific handicap. Its characteristics are not a combination of the characteristics of blindness and those of deafness, and to so treat it would be misleading. Some idea of the degree of the handicap can be gained from realizing that, in the total process of perception by the human being, the use of the visual sense has been estimated at 84 to 90 percent. The second most

extensively used sense is the auditory sense (Rothschild, 1965). When people have lost their sight, they must then shift their primary reliance for perception to the auditory sense. A person who loses his hearing shifts his primary reliance for perception to the visual sense. Those who are deprived of both sight and hearing must rely on senses that require conscious development. The sense of touch is used most; vibrations are used a great deal.

How do People Who are Deaf and Blind Communicate?

Communication is a serious problem. Many are learning to read Braille. Two other methods used are the American One-Hand Manual Alphabet and the International Standard Alphabet. The One-Hand Alphabet requires the hand of the reader to follow the formation of the fingers of the writer by use of his hand cupped over the hand of the writer. The Standard Alphabet, which differs from the Amerian in the formation of letters, allows the hand of the reader to remain at rest while the motions of communication are made by the hand of the writer in the palm of the reader. Both are easy to learn.

Brochures describing these two alphabets can be obtained from: American Foundation for the Blind, 15 West 16 St., N.Y., NY ("The One-Hand Manual Alphabet") and Canadian National Institute for the Blind, 1929 Bayview Ave., Toronto, Ontario ("A Manual Alphabet for the Deaf-Blind"--this is the International Standard Alphabet).

If one does not know either of these alphabets, it is still possible to communicate with deaf-blind people. Grasp their hand (this alone makes them feel you accept them) and print capital letters in their palm. Remember to pause between words.

Misconceptions

All of the Senses of a Deaf-Blind Person are Impaired.

The senses of smell, touch and taste are unimpaired, unless they are affected by a separate problem. As these senses are the deaf-blind person's only means of perception and communication, they are usually acutely developed.

Helpful Hints for Interpreters

Suggestions for the appropriate way to act with a deaf-blind person are similar to most of those mentioned in the section on blindness. In addition, be guided by remembering to orient the interaction by means of touch. Never leave a deaf-blind person in unfamiliar surroundings. If you do leave him temporarily, locate him by something substantial that he can touch. When with the person, stay close enough to allow him to know, by contact, that you are there. Do not be uncomfortable with the person's affliction; the condition is normal to him.

One might ask how a person can benefit from a program that is designed to rely heavily on the use of the senses of sight and hearing if he can

neither see nor hear. The answer could be another question: Is that a well-designed program? Is it designed to provide the maximum benefits to anyone using it? As a final examination, a certain professor of landscape architecture has his students design a formal Japanese garden for a blind person. Designers of interpretive programs might profit from a similar test: if they would add to their design criteria the criterion of making interpretation effective for a person who can only feel, smell and taste. The resultant programs would be much more stimulating, educational and enjoyable by all users than are the programs that are designed to rely on the use of only eyes and ears.

Because the boundaries of a deaf-blind person's world are so much more limited than are those of anyone with less impairment, the benefits from interpretation can be much greater. Due to the problem of communication, the knowledge of deaf-blind persons in many cases is extremely limited compared to that of most people who have all of their faculties. Any forum designed to communicate information to them about some facet of the world in which they live can only be of great benefit.

MENTAL RETARDATION

Facts

Definition

A general description has been supplied by Jeanne Buchan, Field Worker at the King County Chapter of the Washington Association for Retarded Citizens:

> Mental retardation is defined as slowed development which results in individuals functioning at a lower level than expected for their chronological age. The level at which an individual functions varies according to the degree of retardation.
>
> Degrees of retardation are broken into four broad categories: mild, where academic skills and judgement are poor but the handicap may not be immediately apparent; moderate, where lack of communication skills, poor retention and judgement make the handicap more quickly identifiable; severe, limited verbal skills, lack of understanding and poor gross motor control result in acute limitation in ability to function; profound, limited recognition, and little or no gross motor control result in lack of awareness of the environment.
>
> According to statistics (for Washington State) provided by the King County Mental Health-Mental Retardation Program: 49 percent of the retarded population are considered mildly retarded; 35 percent are mildly retarded with other handicaps; 8 percent are moderately retarded; and 8 percent are severely or profoundly retarded.

Eighty-seven percent of the mentally retarded can fit into the general population--these are the mildly and moderately retarded (Mitchell, 1973). Within the various professions working with such people, definitions of degree of retardation will vary.

How Many People Suffer from Mental Retardation?

Mental retardation afflicts approximately 6 million people in the United States, and an additional 25 million are affected if you consider the families of those afflicted (Wash. Association for Retarded Children, 1966).

What Causes Mental Retardation?

Causes are many, including common measles, German measles contracted by the mother during the first three months of pregnancy, chemical failures, accidents, congenital defects, malnutrition in early life, and poor home conditions. According to the Nationai Association for Retarded Citizens: "Mental retardation is a condition, not a disease. There is no cure because there is no way to replace or repair intricate brain cells which have either been destroyed or never properly developed" (NARC, 1970).

How Does Mental Retardation Affect Living?

People with mental retardation learn more slowly than others, and may have limits on what they can learn. That is all. "They are children and adults with the same human needs that we all have . . . Many might never have become retarded if they had been given the opportunity for healthy human development in their early years" (President's Committee on Retardation, 1969).

The levels of their social, physical, academic and psychological development may all be different and their interest levels are usually behind those of normal children. This is caused mainly by their slowed rate of learning, but if they are handled correctly many can catch up. A major legal victory for the mentally retarded in the State of Washington is House Bill 90--the Education for All Bill (effective July 1, 1973). House Bill 90 rules that every citizen of Washington State has a right to an appropriate education. "Appropriate" means that if a six-year-old is ready to learn calculus, he will be taught calculus, if another six-year-old is ready to learn to tie his shoes, he will be taught to tie his shoes. This law, if actively and properly implemented, will bring about great changes. With the necessary education, everyone can reach their full mental potential and thousands more people will have the opportunity to become productive citizens rather than tax burdens.

One of the most obvious, and therefore painful, areas of retarded development is the ability to function acceptably in a group. Often this is caused not so much by retardation, but rather by social contacts that are too infrequent or are inappropriate for his stage of development at the time (Carlson and Ginglend, 1968). The difficulties of this social adjustment can be eased through participation in outdoor recreation, for it "brings

about increased motor, social, and mental skills, and develops a retarded child emotionally and socially, as well as physically" (Brewer, 1971).

Misconceptions

If a Mentally Retarded Person Cannot Speak Intelligibly, He Also Cannot Understand What is Said to Him.

Frequently there is physiological damage that interferes with proper speech, but the person understands perfectly what others are saying, given that the terminology is within his or her level of comprehension.

If a Person is Mentally Retarded, He or She Cannot Learn.

This belief has been one of the primary reasons that the development of people who are mentally retarded has been so limited in the past. Recently, training techniques and philosophies have changed to take advantage of the long-unrecognized learning potential most of them have. As a result, many are being helped to develop their fullest potential.

A Person Who is Mentally Retarded does not Feel Emotions as Intensely as do People with Normal Intellect.

From all that can be determined by people working in the field of mental retardation, there is no difference between people with mental retardation and people of normal intellect in this respect: they are just as sensitive.

A Mentally Retarded Person is not as Physically Capable as a Person with Normal Intellect.

Unless there is some physical damage, the person with mental retardation can learn the same physical skills, such as swimming and roller skating, as anyone else. It may take longer to learn and the individual will probably fall down in the process, but, like anyone else, he or she will get back up.

Helpful Hints for Interpreters

There are no special problems with the retarded in an outdoor setting--the severely and profoundly retarded may have some ambulatory problems or forget where they are going or why (their attention span is quite limited), but they will learn if given the opportunity, and they enjoy a challenge. Those who would have trouble would not be alone, and those who are alone have been trained to handle that particular activity and will not have trouble. A field worker for the Washington Association for Retarded Citizens has taken a group of children on a week-long bicycle trip through the San Juan Islands, and another group on a plane trip to Chicago to participate in the Special Olympics. There was no trouble other than that which could be expected with any group of children under similar circumstances--it was a case of someone taking enough time to find out if the children could handle it, and then simply providing the opportunity.

An interpretive program can be a valuable tool in teaching people with mental retardation, who often have a short attention span and need to be involved with the subject matter in order to learn. The benefits of an interest in nature are numerous for such a person. While he may have a very frustrating and painful time fitting into society, such an individual can find reassurance, impartiality, and many opportunities for self-development in nature. Because so much of nature is concrete and constant (the match and recall segment of learning is well served), it provides an excellent learning ground and provides the mentally retarded person with a subject area about which he can converse with anyone. But, like most learning for people with mental retardation, interest in nature is not acquired easily. Introduction and guidance geared to the pace of the individual are necessary--the interpretive program provides just such a forum.

Interpretive programs can be easily tailored to suit each group of mentally retarded visitors. In general that which is directed at elementary school children will probably be fine for people who are mentally retarded.

AMBULATORY LIMITATIONS

Facts

Definition

People with ambulatory limitations are those who must use a wheelchair, crutches, leg braces, canes or walkers to assist them in moving from one place to another.

How Many People Have Such Limitations?

The number of people in the United States who have some type of relatively permanent ambulatory problem is approximately 6.2 million (BOR, 1973).

What Causes These Limitations?

Their condition can be caused by many afflictions including polio, cerebral palsy, multiple sclerosis, muscular dystrophy, amputation, a congenital defect, arthritis, an accident, and aging.

How do These Limitations Affect Living?

These people are the same as everyone else in their need for independence, self-respect, the opportunity to hold a job, to be able to make beneficial use of leisure time, and in general, have the opportunity to pursue their ambitions.

Their major problem is in the physical design of buildings, doors, street/sidewalk interfaces, restrooms, buses, pathway surfaces, stairs, entrances to buildings--the list is very long. Even for the rights that we take for granted they have to fight hard and often in vain, such as the right to be able to enter a building or use a public restroom. If they

want to apply for a job for which they feel qualified, they first must go to the place of employment to determine if they can get into the building. If they can, they have to see if the employees' restroom is accessible. Their next obstacle is getting through the door of the personnel office.

Their plight in everyday living is slowly being brought to light through their own perseverance, and some changes are being made. Laws such as Public Law 90-480 are being passed to facilitate the integration of all of society. This law, passed by the U.S. Congress in 1968, requires that all buildings totally or partially funded by federal funds must be designed so as to be free of barriers to use by handicapped persons. As of summer 1973, 49 states had passed similar legislation, many of them amending it to include all public buildings. Enforcement of these laws is not always immediate, but at least the instruments are now there to use.

There is some disagreement about how to refer to people with an ambulatory problem. Some people prefer "disabled," feeling that it has a less negative connotation than does the term "handicapped." Others feel just the opposite. Some feel that if one has lost the use of some part of their body they are disabled, but they are not handicapped unless they think they are. The problem might not exist at all if instead the challenge were: "Is any label necessary?"

Misconceptions

The Term "Handicapped" Refers Only to People in Wheelchairs.

The majority of people consulted and much of the literature reviewed during this research used "handicapped" to refer to people who must use wheelchairs. That implies either that (1) people who are deaf, blind, mentally retarded, or otherwise physically or mentally impaired are not handicapped, or (2) there is another term applied to them. No evidence has been found in this research to support either possibility. One is led to conclude that the public is unaware, or tends to forget, that by definition, a handicap exists whenever there is physical or mental impairment.

A Person in a Wheelchair Will Usually be Accompanied by a Non-handicapped Person.

Most people who use wheelchairs are capable of going anywhere on their own provided access to buildings and facilities is properly designed. Some are disabled to the point where they must be accompanied, but this is not true of the majority. If they are accompanied, it is usually for companionship, rather than assistance.

If a Person has an Ambulatory Limitation, He or She is Also Mentally Disabled.

If a mental disorder exists, it is a separate problem. Most people with ambulatory limitations have the same mental capabilities as the rest of the population.

Helpful Hints for Interpreters

Though the problems people with ambulatory limitations encounter in an interpretive situation are few, such problems can be completely restrictive if not provided for. These people need to be able to get to, and move within, an interpretive area with a wheelchair, crutches, leg braces, a walker, or a cane. That requires that there be some mode of transportation to the facility (e.g., buses that can accommodate wheelchairs, crutches, walkers, etc.), no curbs in their path, the gradient at less than 5 percent, and the surface area hard, smooth, wide enough to accommodate a wheelchair or the various spreads of crutches, and level (the smaller front wheels of a wheelchair tend to seek out, and become lodged in, ruts and holes in a surface).

The height of a person sitting in a wheelchair should be considered throughout the design of an interpretive program.

Because people confined to wheelchairs must drink a lot of liquid, restrooms and drinking fountains should be conveniently located and designed to accommodate a wheelchair (even pit toilets are acceptable as long as the floor is level with the path and the interior is properly designed). For a half-mile loop trail that is fairly level, one restroom and one drinking fountain at the start of the trail would suffice.

Benches with the seat approximately 17 inches above the ground and paved pullouts for wheelchairs along trails are welcome and often necessary.

A trail should be no longer than one-half mile, with a cut-off midway.

Parking lots should be as close as possible to the facility they are meant to serve--closer than 350 feet if possible.

Items that are meant to be handled must be within reach of an individual in a wheelchair.

If boardwalks are used, the boards should run perpendicular to the direction of travel and the boards must be close enough together to prevent tips of crutches becoming lodged between.

For physical design specifications, see Appendix A. The specifications in the American National Standards Institute's "Specifications for Making Buildings and Facilities Accessible To, and Useable By, the Physically Handicapped" which are used by many architects are not satisfactory in some respects to many of the physically handicapped.

PART III. INTERPRETATION FOR HANDICAPPED PERSONS: WITH A SPECIAL CONSIDERATION OF TRAILS

WHAT ACCOMMODATIONS HAVE BEEN PROVIDED?

While handicapped persons' recreational goals may be similar to those of the majority of recreationists', their particular handicaps are such that some special accommodations by resource managers are necessary to facilitate pursuit of these goals. These special accommodations are few and need not be complex or expensive. In general, all that is required is provision of an appropriate mode of communication and provision for physical access to the area and its facilities.

In recent years, some effort has been made to accommodate these requirements. Most effort has been in the form of interpretive trails. Such trails have been provided at all levels of recreation jurisdiction: federal, state, county and municipal. However, though these efforts have been widespread, they have not been numerous. The following figures are representative of how much effort has been made:

Agency	Approximate number of interpretive trails	Number of interpretive trails for handicapped persons
National Park Service	575[1]	8
U.S. Forest Service	304[2]	16

To gather information about the various methods employed to accommodate handicapped persons, the author contacted administrators of all the trails located (approximately 90). In addition, a representative sample of the trails was visited on a 12,000-mile trip during the summer of 1973. Following is a compilation of that information. Some of the methods have been successful; others have not.

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[1] Hooper, 1973.

[2] Lloyd, 1974.

Successful Accommodations

Communication

Blind: A few trails have used cassette players for their interpretive messages. The player is carried by the visitor (using a belt clip or shoulder strap) and the location of each interpretive station is indicated by each message concluding with mention of the number of feet to the next station. Trails that have used cassettes and those that rely on conducted walks or on the blind visitor being accompanied by a sighted person have reported the greatest success in communication with blind persons.

Partially sighted people can read signs with large print (18 point or larger).

Mentally retarded: In communicating with people with mental retardation, those trails that have been successful have translated the information to the level of comprehension appropriate to the particular group. Such custom-tailoring is possible only through the use of personal guides--either agency personnel or the people accompanying the group or individual.

Ambulatorily limited: All trails have been successful in communicating with people who have ambulatory problems if they used personal guides, audio equipment, or signs. Signs must be mounted at a height which enables a person in a wheelchair to read them.

Location of Trail

Those trails that are within an hour's ride from home have had the greatest use by handicapped persons. Proximity to an urban center (where most handicapped persons reside), and service by public transportation contribute to this success. There are exceptions: a few trails located in remote areas report high use by handicapped persons. In each case, there is a special feature that probably accounts for the exception: either the place is very popular with the entire population, such as Yellowstone National Park; or the place is regularly used for organized activities of handicapped groups.

Physical Design of Trail

Blind: The trails enjoyed most by blind persons are those that have been left in as natural a state as possible (as long as they are safe). Such a state affords a challenging experience.

Ambulatorily limited: The trails that have been successful for people with ambulatory limitations are those that are hard, smooth, at least four feet wide, have little or no crown, no steps, a gradient of less than 5 percent, have appropriately designed drinking fountains and restrooms conveniently located, and have a parking area and approach area that are similarly accessible.

Amount of Use

An unexpected success has been the large amount of use of these trails by non-handicapped visitors. These people have been very excited about the experience they have on such a trail. It is one of the few times when they have had to use all their senses, and they report that the experience is much more interesting, enjoyable, and informative than the experience they have on more conventional interpretive trails. (This increase in interest, enjoyment, and information retention has been observed by others: Travers, 1967; Mahaffey, 1969; Washburne and Wagar, 1972).

Funding

The majority of trails reported that civic groups (such as Lions, Kiwanis, Jaycees, Women's Garden Clubs) were eager to donate money and time to such projects.

Unsuccessful Accommodations

Communication

Blind: The majority of trails have used Braille to communicate the interpretive information to blind persons. Of the 49 trails that use Braille, only 6 reported that it was successful in communicating with blind visitors. Some trails use routed wood signs--blind people can feel the letters, but problems can occur with cracks in the wood (they mislead fingers) and bird droppings on the signs.

Location of the Trail

Most trails that are not close to urban centers reported disappointingly low use by handicapped persons. This could be due to two things: (1) the high fatigue factor characteristic of many handicapped people (more than an hour's drive is too tiring), and (2) the lack of public transportation (upon which many handicapped persons rely) to remote areas.

Physical Design of Trail

There were several reports of trail designers finding it difficult to "not coddle the handicapped" with their designs. Because of such coddling, many trails designed for use by blind persons have elicited complaints by users that it is "too easy"--they would appreciate greater challenges.

Almost all trails that tried to provide for the needs of both blind persons and persons in wheelchairs reported complaints by blind persons that "the trail was too tame." Because of the low topographical relief and smooth, hard surface required for the use of a wheelchair, a trail designed to meet such requirements cannot provide the same experience provided by a trail left in an almost natural state.

It was found that "feel stations" wore out rapidly on trails for blind persons.

On all trails that are paved for wheelchair use, erosion problems with the paving were experienced.

Amount of Use

Except for trails that are located at areas regularly used by handicapped groups for organized activities, most trails reported visitation rates by handicapped persons so low that it did not warrant the extra expense and time required to provide the special trails. Typical figures for annual visitation by handicapped and non-handicapped persons are: 100 handicapped, 10,000 non-handicapped. Some administrators offered possible explanations: trail not widely enough known; need publicity; location too remote; handicapped not interested in nature; no support from handicapped agencies; handicapped don't want "special" facilities. An additional complaint by administrators is that the trails have little or no repeat visitation--"it is a one-shot deal."

Funding

Most trails did not have sufficient funds for proper completion and maintenance. Those trails funded by civic groups experienced the most trouble; civic groups were extremely enthusiastic and generous at first, and then lost interest either midway through the project, or immediately after the public dedication. The results were either that there was not enough money to finish the project, or there were no funds for maintaining the trail. Trails that were funded by the land managing agency had less trouble with funds running out, but most reported difficulty in the initial procurement of funds for a "special trail."

Paved trails were all expensive due to the cost of paving and to the need for doing most work by hand in order to avoid excessive damage to the area.

Miscellaneous Problems

Segregation

Complaints from handicapped persons that they do not want separate facilities were reported from many trails. Some trails have actually been boycotted by handicapped persons. They want to use regular facilities and do not want to be pampered. Many of them feel that using "special facilities" draws attention to their handicap. (A few administrators reported comments from handicapped persons that they appreciated any opportunity for a new experience.) Another objection is to the use of titles for the trails which point out that users are handicapped. Some trails are segregated to the point that managers say they try to discourage use by non-handicapped persons.

Vandalism

A commonly reported problem was vandalism in various forms. The most common form is mutilation of Braille signs. The raised dots have been hammered down; dots have been added; entire Braille sheets have been hammered beyond any use; sheets have been half torn away, leaving sharp, jagged edges; or the entire sheet has been taken leaving a blank piece of wood. The item that needs most frequent replacement is the guide rope on trails designed for blind persons. The most sadistic form of vandalism reported was the relocation of the guide rope so that blind persons were led off the trail and down into a ravine. One trail had been vandalized so often that it finally had to be closed because the administrators simply ran out of money. Another was temporarily closed because it would take a year to put it back into useable condition. Vandalism is not a problem for all trails--some have experienced none.

Civic Donations

Over half the trails received funds in the form of donations from civic groups such as Lions, Kiwanis, Jaycees, and Garden Clubs. These groups also volunteered help in the installation of the trail. However, problems were encountered between the inception and completion of the projects. The difficulty stems from the fact that these groups are usually involved in so many civic projects that they spread themselves too thin. As a final result, they either do not produce the amount of money promised, the physical labor they offer is difficult to coordinate, or their desires run counter to the agency's policies.

Help from Handicapped Persons

Though many trails were planned with the help of handicapped persons, many others were not, and administrators of those trails indicated they would not have had so many problems if they had had such consultation.

No Guidelines

Most trails were difficult to plan because no guidelines for such projects were available.

HANDICAPPED PERSONS' SUGGESTIONS

Through interviews with variously handicapped persons and persons working for the rehabilitation of such people, information was gathered about what these people want in an interpretive situation.

Blind

Most blind people do not want special treatment that will separate them from the general public. The American Foundation for the Blind has a policy against programs and facilities that are expressly for blind people, for such "specialized gardens, trails, or museums often carry

a psychological impact that is distasteful to the blind or otherwise visually impaired person who has a consciousness of the dignity of self" (American Foundation for the Blind, Policy Statement, 1972).

Mr. J. Simmons, recreation coordinator for the Canadian National Institute for the Blind in Toronto, thinks it is unnecessary to provide any special guiding equipment for blind persons, for it would be a rare occasion when a blind person would visit an interpretive facility unaccompanied by a sighted person (Simmons, 1974).

Dr. J. Dunham, director of the Northwest Rehabilitation Center for the Blind in Seattle, made the following suggestions for interpretation:

> Why not create places like old Roman or Tibetan gardens or anything else possible that would give people an idea about other cultures.
>
> If a railing is used for guiding, use tactile material representative of the area such as driftwood if the facility is near the ocean.
>
> Let people crawl through a hollow tree to see what it feels like.
>
> Because stuffed animals feel so dead they should not be used to give a blind person an idea of what the live animal is like.
>
> Take people through tunnels or caves to hear the sounds.
>
> Record the sounds at all four seasons [this would be an excellent idea for presenting a more complete picture of biological cycles].
>
> A model of the facilities that could be felt by blind people would be helpful in orientation (Dunham, 1973).

Deaf

Kathern Carlstrom, a counselor at Seattle Community College in the Program for the Deaf, has some students who are active in hiking and camping and are pursuing an outdoor recreation curriculum in college. She feels that if people such as these could be involved in interpretive programs, they could act as liaisons to introduce more deaf people to such activities. The feeling of isolation will be lessened and a few more may be encouraged to try it, and so on into a snowballing effect. Their use of interpretive facilities could be increased if appropriate methods of communication were available.

It has been suggested that if even one person employed at an interpretive facility would learn some sign language, they could perform a vital service to people who rely on sign language for communicating.

For people who have become deaf postlingually, printed material is usually sufficient. Guides would be well advised to precheck their audience to see if anyone has a hearing problem. If someone has, they should be near the person speaking to facilitate speechreading. Speechreading requires that the speaker always face the audience and speak plainly. Terminology should be very explanatory (they will not tell you that they do not understand). Yelling or exaggerating does not help.

Assurance of personal safety is important and most deaf people will feel safer if they are supplied with a whistle before venturing into an unfamiliar area. It will provide a signal they know can be heard if they get lost or in trouble (they will not be able to hear your shouts) (Carlstrom, 1973).

Mentally Retarded

All the people contacted were enthusiastic about using interpretive facilities for teaching people with mental retardation. Such areas provide a place for participation by the whole family which is extremely important, especially for siblings; outdoors the retarded member of the family is equal. One of the people consulted, whose son is retarded said: "In the woods or at the beach we tend to feel he is normal--because nature isn't prejudiced."

Referring to interpretive trails, a woman who works with mentally retarded children indicated that the length of a trail is not as important as the quality and amount of involvement allowed. "A quarter-mile trail that is good is much better than a mile trail that is poor--on the long trail they'd spend all their attention trying to stay together and not lose their lunches." The same field worker felt that the most satisfactory method for presentation of interpretation to people who are mentally retarded will be that which allows total involvement: to be able to put their arms around a tree and maybe sit on a branch will help them understand about a tree.

Ambulatorily Limited

Most sources gave similar statements: just make the areas accessible. The more areas that are designed to accommodate their needs, the less they will have to plan their activities around the few facilities that can accommodate them.

A POTPOURRI OF SUGGESTIONS

This is a collection of miscellaneous facts and ideas gathered during the author's travels, interviews, and readings.

Trying to Satisfy Everyone

No one design can be correct for all people; handicapped persons all have different abilities and desires, and they receive different types of training. The majority of them want to be independent but some do not, especially the newly-afflicted who are in the adjustment process. Most object to segregated facilities, some are "grateful for anything." Some will not even be interested in interpretive facilities and that is all right; many non-handicapped people are not interested either.

Interpreters can satisfy more visitors than usual by trying new ideas. Avoid being locked into traditional methods. In place of the typical interpretive trail, try some guided tours on buses, rafts, horses, bicycles, trains, skis, canoes, boats, or snowshoes. All of these can be managed by most handicapped persons and, in addition to the benefits of the interpretation, they will be introduced to a new activity.

Another approach to satisfying as many visitors as possible is having two types of interpretive trails. One type would follow the design recommendations for accommodating wheelchairs, with a smooth, hard surface and as little relief as possible. Such a trail would satisfy people in wheelchairs, many of those with other handicaps, frail people, those with respiratory or circulatory problems, visitors with baby strollers, the timid, and many individuals who normally will not leave their automobile if the trail "looks like work." The other type of trail would be more in line with what many blind visitors want: unpaved, as much relief as is compatible with the interpretation, and left in as natural condition as possible while still being safe. This type of trail would satisfy the half of the visitor population that wants more challenge than would be offered by the first type of trail.

The one modification in interpretive plans that could bring about satisfaction of the largest number of visitors would be a decrease in the amount of reliance placed on exhibits (that cannot change to suit the visitor), and an increase in the amount of reliance on people to bring interpretation to the visitors. With the exception of design modifications required for the use of ambulatory aids, all the accommodations for handicapped persons can be accomplished through provision of more interpretive personnel. Use of people rather than exhibits allows tailoring of interpretation to meet the needs of each audience, and it allows for encouragement of personal involvement on the part of the visitor. The financial restrictions involved in acquiring more personnel can be alleviated in two ways: (1) if less money is channeled into the exhibit budget, more can be channeled into the personnel budget; (2) there are many people in the community such as retired persons who would be willing to act as volunteer helpers. (Also see Employment of Handicapped Persons in this section.)

Cost Involved in Accommodation of Handicapped Persons

To determine whether construction costs are increased if facilities are designed to accommodate handicapped persons, a study was conducted by the Department of Urban Studies, National League of Cities, for the Department of Health, Education and Welfare. Results revealed that if facilities

are constructed to be barrier-free, the cost is increased by less than one-tenth of one percent of normal construction costs. They also revealed that facilities already in existence can be modified to be barrier-free for one percent or less of the original construction cost (National League of Cities, 1967).

An additional point worth considering is that if a facility is designed so that handicapped people can also use it, the number of users increases and the cost per user is actually reduced.

Donated Funds

Though funds are obtainable from civic groups for projects that will help handicapped persons, why should that approach be necessary? Most interpretive facilities are provided on public lands and financed by public taxes. Handicapped people pay taxes so it makes no sense to use funds to which they contribute for building facilities that exclude them, and then go begging for donations to build facilities that will be useable by handicapped and non-handicapped visitors. If funds in general are short, donations for facilities would be acceptable as long as the idea of providing "something for the handicapped" is not used for leverage.

One handicapped individual interviewed offered this suggestion for civic groups: "If they want to do something for us, why don't they get jobs for us?"

Employment of Handicapped Persons

There are many handicapped individuals who are willing and able to assist throughout interpretive programs. Often they can be located by contacting local vocational rehabilitation centers or local organizations of handicapped people. In some instances, federal funds are available to assist in hiring handicapped persons. Also, the Youth Conservation Corps, a federally funded summer employment program, has some opportunities for employing handicapped youth for conservation work in forest and park settings.

Program Content

Do not crowd a lot into an interpretive program. Many handicapped people will spend a long time on one item: they are alert to more about the item than are most non-handicapped visitors, and many of them have had no exposure to information that is commonly part of interpretive programs. For example, many have little of no knowledge of such basic phenomena as growth and development of plants and animals, where they live and why. The interpreter should take advantage of these points. By choosing one item or subject and presenting a thorough explanation of it, the interpreter can introduce handicapped visitors to a whole new part of their world. At the same time, by not displaying the entire inventory of goods, the interpreter can insure repeat visitation.

Some instruction on safety in the woods would be worth including in an interpretive program. It would probably benefit more than just the handicapped visitors.

Availability

A need that is shared by people with any type of handicap is to have the facility within reach. Handicapped people tend to be in the lower economic levels, so the closer a facility is to an urban center, the less will be the possibility of cost of transportation acting as a limiting factor in the use of the facility. An interpretive area should also be served by public transportation that handicapped persons can use, including the person in the wheelchair.

Parking areas should provide ample space, for the non-handicapped visitors fill even the spaces marked for handicapped visitors.

Facilities and interpretive programs should be designed to be available throughout the year or as much of the year as possible. It is most discouraging to go to all the effort necessary for many handicapped people to reach a special facility only to find the place "closed for the season."

Publicity

Facilities that can accommodate handicapped visitors should be publicized. Handicapped people are resigned to public facilities not being designed so they can use them. They must be alerted to those that are so designed. Contact local handicapped organizations and rehabilitation centers. These facilities should not be publicized as "for the handicapped," but rather for all people. Just let handicapped persons know what accommodations are available.

Reaching the Shut-In

Through the use of television, interpretive programs can be made available to people who are confined to their homes. Many stations will donate time for public service and, in some cases, foundations will grant funds for such purposes. Contact the local office of the Department of Health, Education and Welfare for information.

SUMMARY

One of the functions of interpretation is to enrich the visitors' experience. To be effective, interpretation must be accessible to, and understandable by, the visitors. This requires that we know who the visitors are. Traditionally, interpretation has assumed a relatively homogeneous audience, but many people do not fit that assumed mold. Some who do not are physically and mentally handicapped persons.

To learn about handicapped persons, their needs and desires, and to determine what has been done to serve these needs and desires in the interpretation field, the author reviewed literature, interviewed handicapped people and those working for their rehabilitation, conducted a national survey of interpretive facilities designed to accommodate handicapped persons, and traveled 12,000 miles visiting a representative sample of these facilities. Following is a summary of the author's findings:

1. Those who are handicapped have recreational goals similar to the majority of recreationists. They do not need to be pampered; they are used to living in a world that has not been designed for them. While a few special accommodations are necessary, they need not be complex or expensive. Necessary accommodations are listed below:

    a. As only five to ten percent of blind people read Braille, information can best be presented by way of sound, such as by use of cassette tape players. No special guiding apparatus is necessary; they move throughout the rest of the world without guide ropes or kickrails, and the interpretive setting is no different. "Whether the blind person is accompanied or alone, it is unnecessary to have any special design specifically for the blind or visually impaired in the surroundings as long as the areas are safe for everyone" (A.F.B., Policy Statement, 1972).

    b. The main problem for deaf persons is that so few hearing people have the knowledge necessary to communicate with them. Most deaf people are not able to learn the language of hearing people, but hearing people are able to learn the language of deaf people. If interpreters would teach themselves finger-spelling (One-Hand Manual Alphabet) or learn some sign language, they could make some of their programs available to deaf persons.

    c. Because deaf-blind visitors would usually be accompanied by someone who is not handicapped, no special accommodations are necessary. Interactions should be oriented to touch.

    d. The most satisfactory presentation of interpretation to people with mental retardation is that which has been geared to their particular level of comprehension and which allows total personal involvement.

e. People with ambulatory limitations, particularly those in wheelchairs, simply need the facilities accessible and navigable by them with their apparatus.

2. In recent years, some effort has been made to accommodate these requirements. Most effort has been to provide interpretive trails. Most of the administrators of these trails reported that the efforts had not met with as much success as they had envisioned. However, from these first efforts, we have learned valuable lessons for the future.

From handicapped persons, we have learned:

--they do not <u>want</u> special facilities--they feel that constitutes segregation;

--they do not <u>need</u> special facilities--most are not that handicapped.

From resource managers, we have learned:

--it is difficult to obtain funds for special facilities;

--when special facilities are provided, they are used very little by handicapped people;

--such special facilities, because they are designed to require the use of all the senses, receive a high amount of use by non-handicapped visitors. These people find such facilities much more stimulating, interesting, and informative than regular facilities.

3. The message seems clear. In our rush to accommodate the needs of handicapped people, we must not perpetuate the process of social segregation. We should design all facilities for all people. With the extra attention paid to designing for use of all the senses, the facilities will be more satisfying to all visitors and will result in more effective interpretation.

In addition, if we remove the barriers that are presently keeping handicapped people from using our facilities, we will have gone a long way toward reducing the handicaps these people bear.

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APPENDIX A

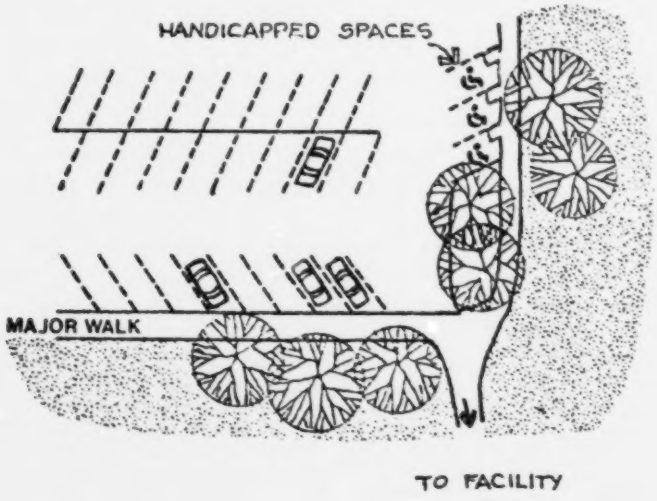
PHYSICAL DESIGN SPECIFICATIONS FOR ACCOMMODATING AMBULATORILY LIMITED VISITORS AT INTERPRETIVE FACILITIES

The following material is from The Design of Public Outdoor Recreation Facilities to Accommodate the Handicapped by E. D. Mills and is reprinted here with Mr. Mills' permission.

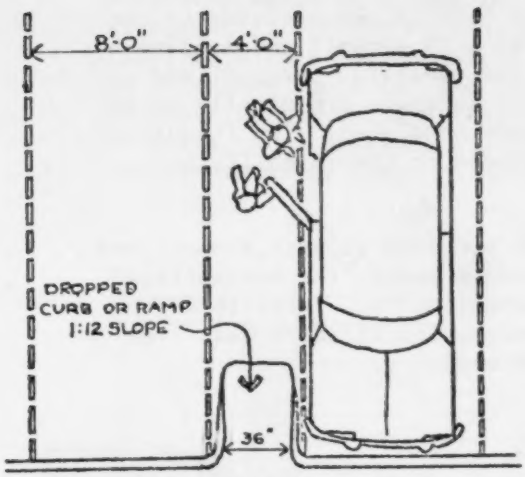
PARKING

Most of the handicapped, especially those in a family situation, arrive at the majority of our parks in private automobiles. What they usually find once they arrive is difficulty getting out of the car and a long walk to the activity they came to participate in. Therefore, adequate parking spaces for the handicapped should be provided as close as possible to all the major facilities and those facilities especially liked by the disabled.

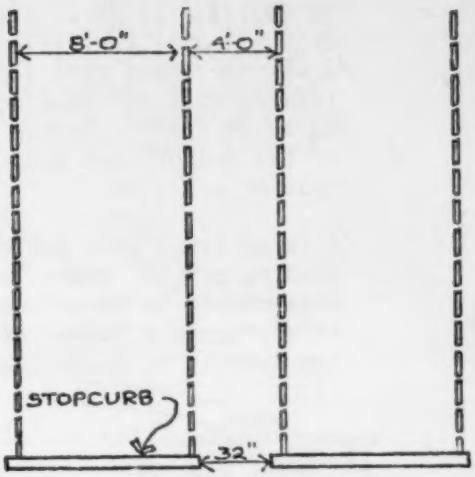
Parking spaces for individuals with physical disabilities should be 12 feet wide in the diagonal or head-on situation, allowing room for individuals in wheelchairs or on crutches or braces to get in and out of an automobile onto a level surface suitable for wheeling or walking. Generally, the 12-foot-wide space is not possible nor desirable for all the parking spaces. Therefore, it may be desirable to designate certain spaces by signing for the handicapped. In existing parks, end stalls can usually be modified easily to meet this need. All parking areas should have at least one stall plus one percent of the total parking stalls so designated. These spaces would best be located nearest the facility or activity, but out of any major pedestrian flow. More stalls would be required in areas frequented by the handicapped.



If the parking lot and adjacent walk, trail, or area are at different elevations, drop curbs, or ramps should be provided (see section on walks). If the lot and adjacent area are at the same elevation, car stops or guard rails should be provided but 32-inch openings left between spaces. Drainage should not run out of or across these dropped curbs or ramps. Catch basins or drop inlets should be kept out of this general area.

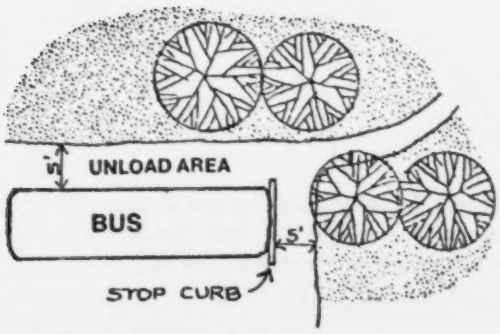


LOT AND ADJACENT AREA
AT DIFFERENT ELEVATIONS

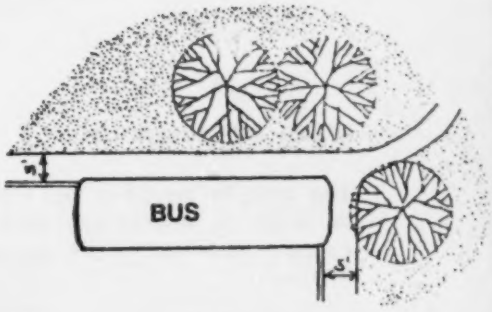


LOT AND ADJACENT AREA
AT SAME ELEVATION

Consideration should also be given for the parking of busses carrying handicapped groups. Adequate protected space should be provided for individuals getting on or off side or rear loading buses. This is encouraged even if dropoffs are provided so that individuals desiring to use the parked bus can do so. Bus parking can be immediately adjacent to curbs so that park visitors can step or be lifted right from the bus to the sidewalk. Individuals in wheelchairs or on crutches or braces shall never be compelled to wheel or walk behind the parked bus or automobile.



UNCURBED AREA

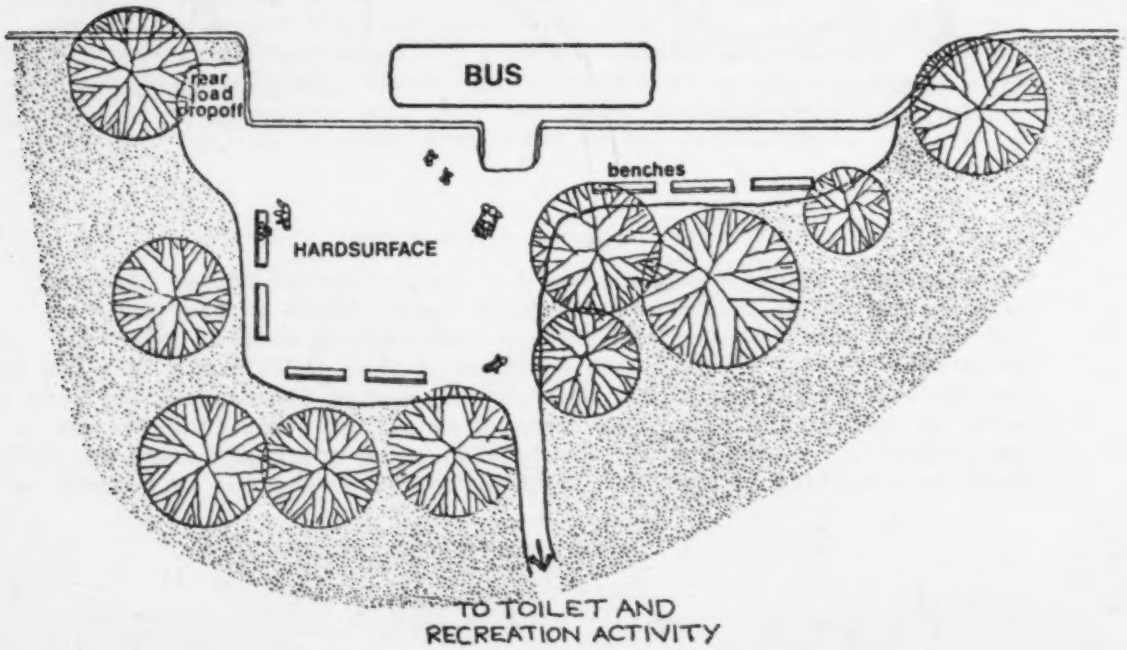


CURBED AREA

DROPOFF AND LOADING

In addition to parking areas usable by the handicapped arriving by car or bus, major facilities should be provided with dropoff and loading areas for these cars and buses very near the facility. Dropoff and loading does not have to be the same area. Turnouts are usually best to avoid traffic backup or some other unsafe condition. The frequency of the dropoff and loading points would depend on the intensity and type of activity.

A large level hard surfaced area should be provided at each dropoff and loading point. Where landings can accommodate buses, the hardsurfaced area should be large enough for about 20 wheelchairs. There should be an appropriate number of benches, some shaded, and direct access from the landing to toilets and the facility or activity.

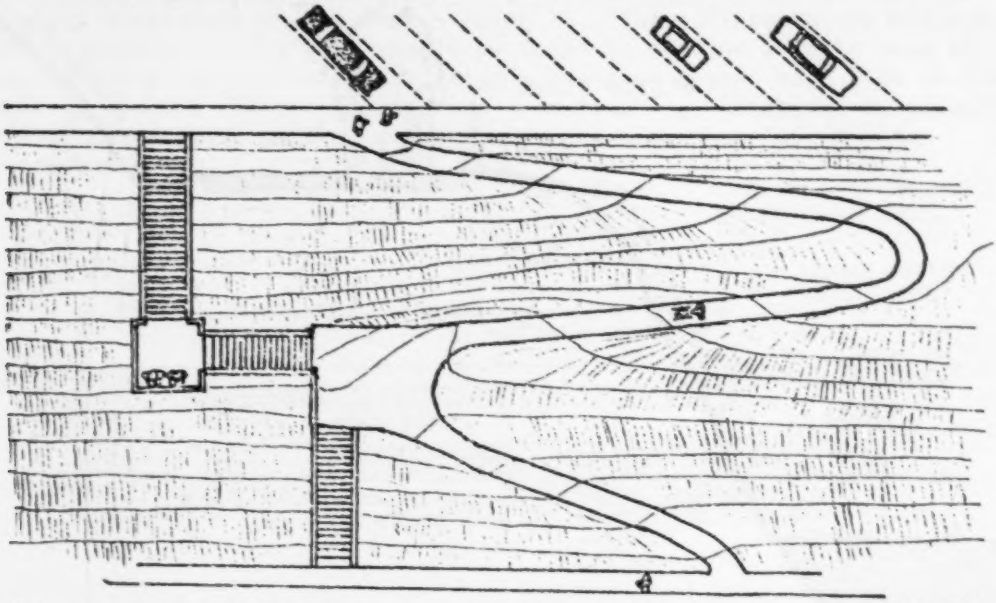


WALKS AND SURFACING

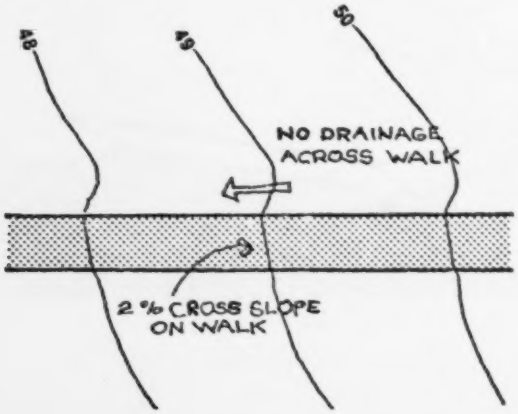
The provision of a well-planned walkway system in any public park can do much to encourage park use by the handicapped. Many of the handicapped receive great enjoyment by simply being out in a park moving around.

Public walks should be at least 48 inches wide and should have a gradient not greater than 5 percent (one in twelve). A width of 72 inches is preferred. Walks greater than 5 percent become ramps and are then subject to the standards indicated in the section on ramps.

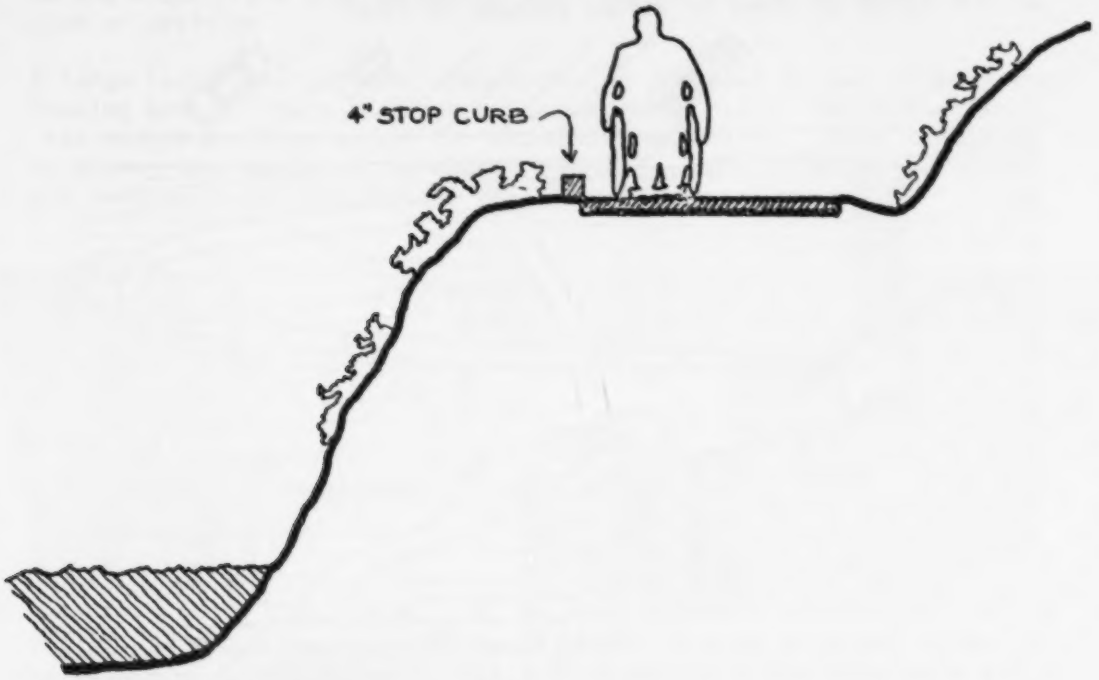
Extra care should be taken in the layout of walks to combine the 5 percent maximum gradient with aesthetic considerations and considerations for providing walks as direct in line with predetermined pedestrian movement as possible. If the walkway has to go the long way around to get to a facility with a grade under 5 percent, then steps should be provided as an alternate route for the non-handicapped as they cannot be expected to traverse the extra distance. Walks should avoid an excessive number of sharp turns or right angles, and be of a continuing common surface, uninterrupted by steps or abrupt changes in level.



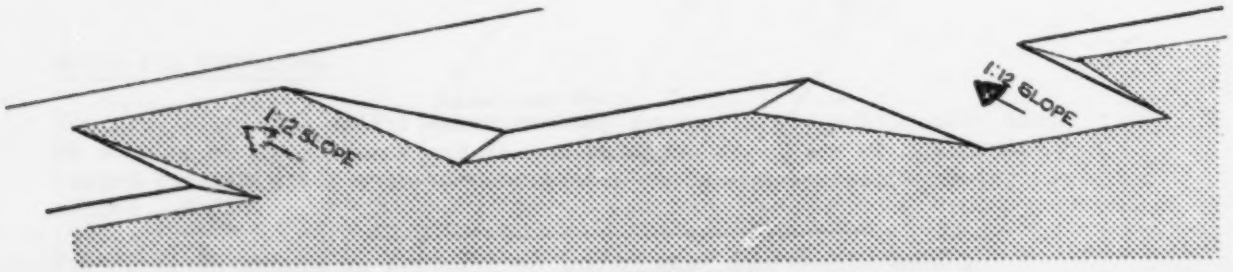
All walks should be kept as nearly level in cross section as possible since wheelchair users encounter difficult maneuverability on banked or crowned surfaces. Walks should also be sloped to let water drain off immediately to one side instead of running down the walk. The cross slope, however, should be kept under 2 percent. Care should also be taken to minimize drainage across walks. Manholes and drain inlet grates should be kept off all walks. If grating cannot be avoided, openings in the grate shall not exceed one-half inch square.



Whenever possible, topography should be fairly level for three or four feet on the downhill side or sides of the walk as a safety strip to wheelchair users who may accidentally run off their path of travel. In places where this is not possible or in places potentially very dangerous to wheelchair users, curbing 4 inches high should be installed. Guardrails or handrails 32 inches off the ground can be substituted for this curbing.

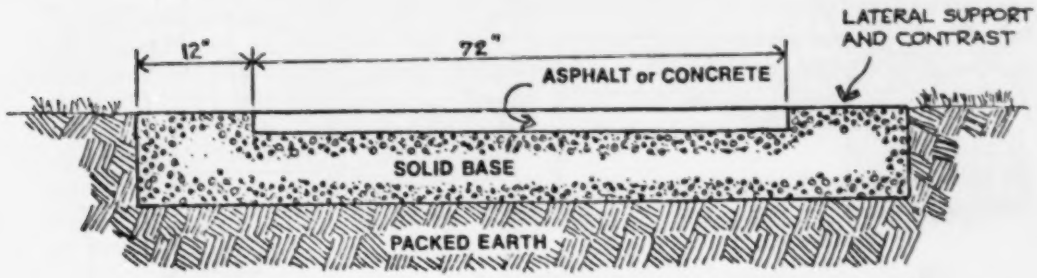


Wherever walks cross walks, driveways, or parking lots, they should blend to a common level. This can be accomplished by constructing a curb cut or more simply by the addition of a small ramp. The latter is the easiest and cheapest method, especially when modifying existing situations, but is not recommended in most instances because of the drainage interference it may cause.



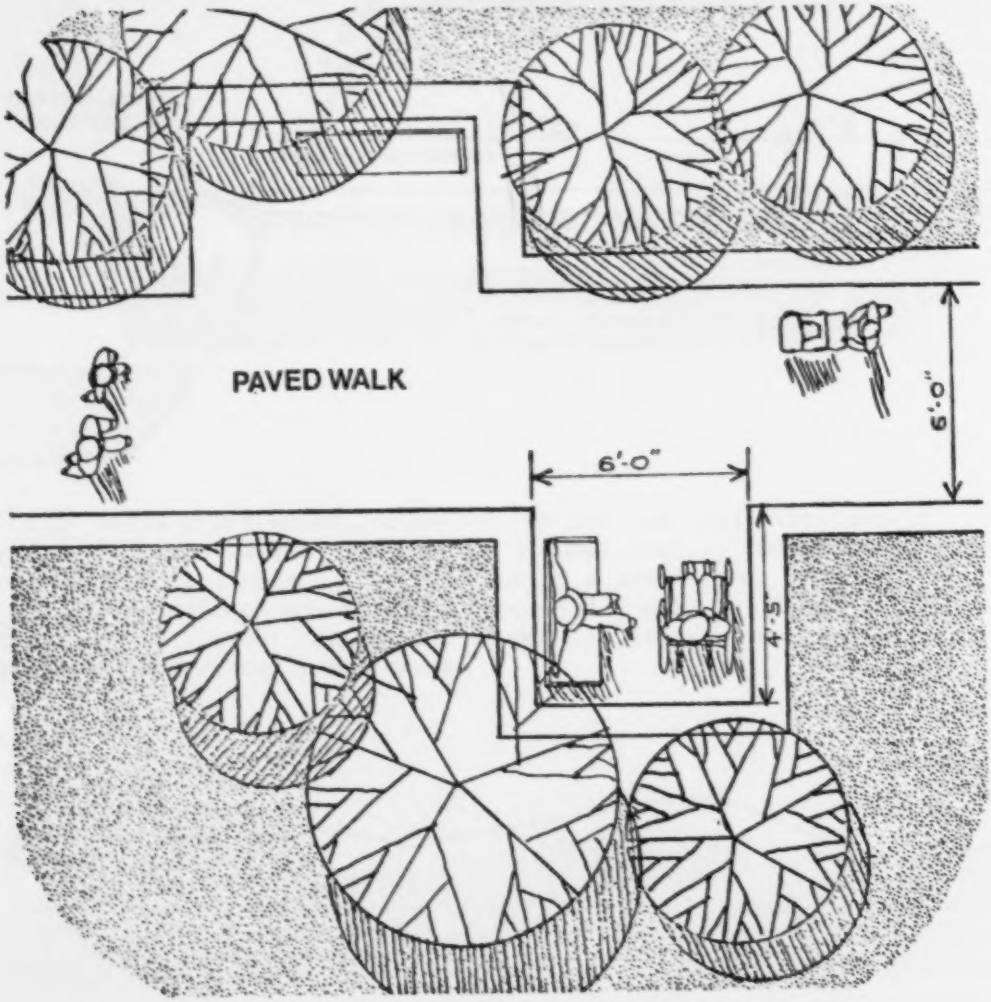
Surfacing

All walks, ramps, landings, and other hard surface areas, shall be constructed with a non-slip material such as brushed concrete. Expansion joints should be minimized as well as expansion joint filler which expands above the walk surface. One of the best paving materials is sealed asphalt since there are no expansion joints to worry about. Also, the color of asphalt surfacing usually blends in better with the natural environment than does concrete. Very hard asphalt should be used to prevent wheelchair wheels from sinking in. The surface should not rub off on wheels. Extra care should be taken to provide a solid base of packed gravel or concrete that extends one foot beyond each side of the walk to prevent the paving material from breaking, chipping, or sloughing off at the edges. Lateral support with the base material is also recommended.



RESTING AREAS

Many of the handicapped and elderly must frequently rest. For this reason, it is recommended that frequent resting places be provided along longer walks, near parking lots and pickup areas, and at activity areas where strenuous activity is performed. These resting areas should be out of the way of the main pedestrian traffic flow, but be accessible to it and on the same level with it. Appropriate benches should be provided as well as a small hard surfaced area for a standing wheelchair. Partial shading of the area is recommended.



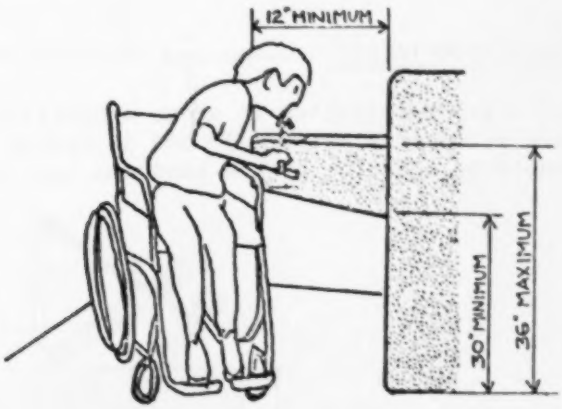
DRINKING FOUNTAINS

Most handicapped individuals consume more water more frequently than non-handicapped persons. Because of this fact and the fact that the handicapped cannot traverse distances easily, it is recommended that more drinking fountains be provided in all public parks than normally would be furnished. There should be at least one drinking fountain at all major use areas, especially areas of high activity, mnd along hiking trails. Fountains should also be installed in close proximity to parking and dropoff areas for use by the handicapped individual just arriving in the park or awaiting transportation home.

Fountain basins shall project out from its base or support a minimum of 12 inches for wheelchair use. Water bubblers shall be 30 to 36 inches above the ground. This does not apply to fountains with dual bubblers for handicapped and non-handicapped. There shall be a minimum clearance under the fountainhead projection of 30 inches. Adequate hard surfaced area should be provided around fountains for wheelchairs. Stepping blocks, often provided for the convenience of children, should be omitted or located so as to not interfere with a wheelchair user. The 36-inch maximum height of the water bubbler should more than accommodate all but the smallest children. Runoff from the water fountain shall not flow on or across the hardsurfaced area surrounding the fountain.

Water fountains shall have upfront spouts and controls operable by one hand, and should not be set in an alcove unless the alcove is 32 inches or more wide.

UNACCEPTABLE

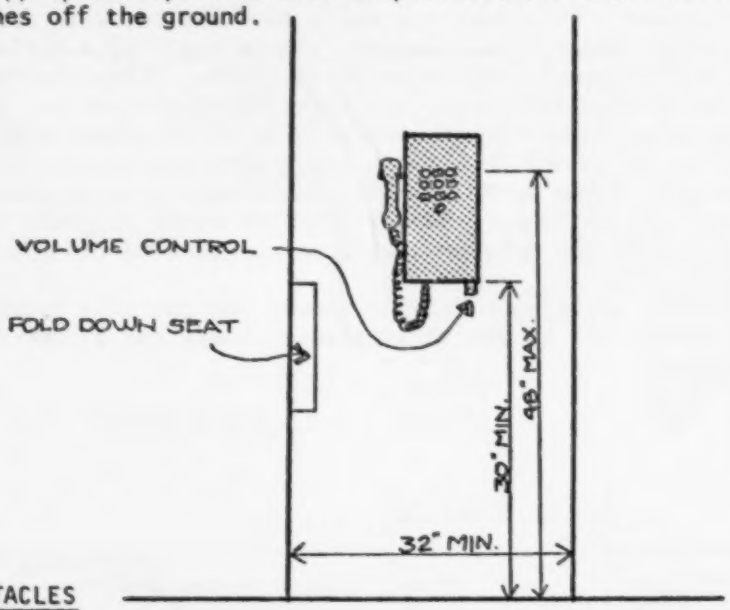


ACCEPTABLE

PUBLIC TELEPHONES

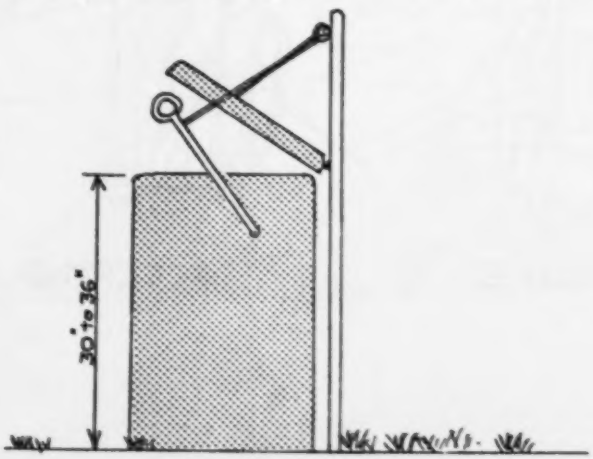
All public telephones should project somewhat from their supports and there shall be at least 30 inches of clear space beneath the phone or phone shelf. A wall mounted phone is acceptable while a low post mounted phone is more desirable. The conventional public telephone booth is not acceptable. Phones can be recessed into a wall as long as the recess is more than 32 inches wide and will otherwise accept a wheelchair.

Push button phones are preferred over dial phones so individuals with arthritis or deformed hands can make use of them. An inconspicuous volume control is recommended on each phone and instructions for its use placed appropriately. The dial or push buttons shall never be more than 48 inches off the ground.



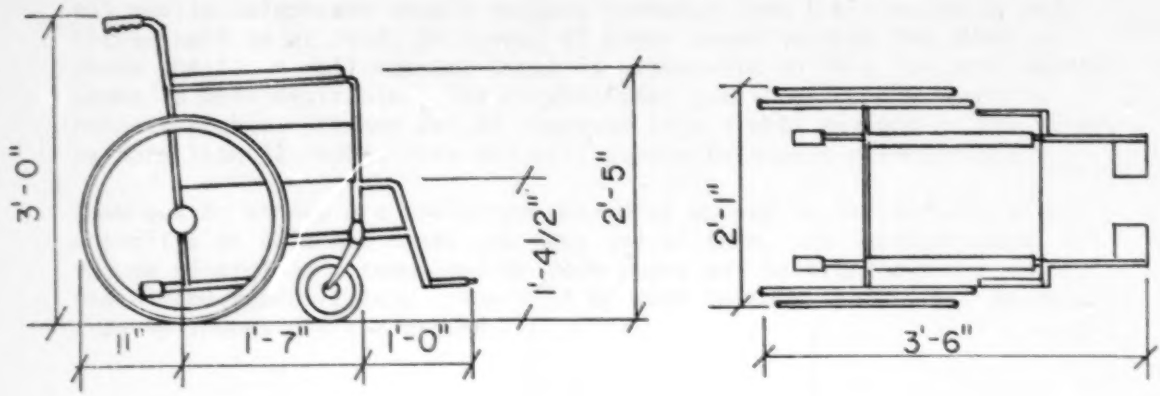
TRASH RECEPTACLES

All trash receptacles in areas accessible to the handicapped should have an opening between 30 and 36 inches from the ground. Containers should be operable by one hand and have no sharp edges or corners.



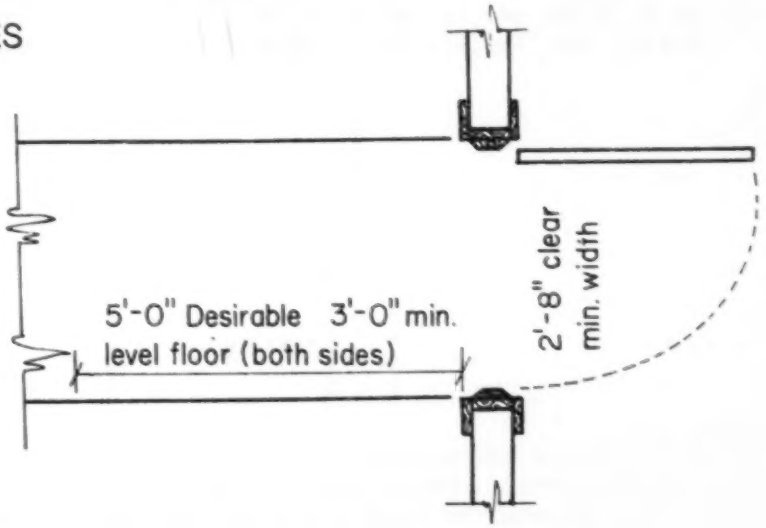
The following material is from Barrier-Free Design for the Disabled by B. Allan and is reprinted here with permission of Ms. Allan and the Easter Seal Society for Crippled Children and Adults of Washington.

1 WHEELCHAIR



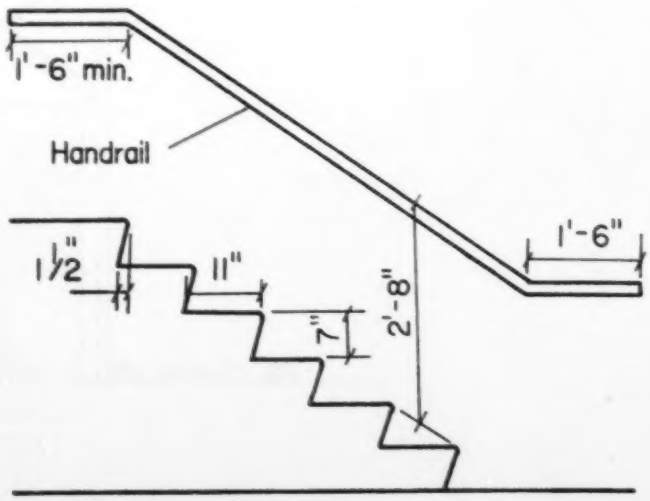
2 DOORS AND ENTRIES

All doors should be a *minimum* of 2'8" wide with door open to 90%. Sills should be flush with the doorway. Door pressure should not exceed eight pounds. The floors on either side of the doorway should be level for at least 5'. Outer and inner doorways less than 6'6" apart are difficult for the disabled to manage. Revolving doors are impossible for those in wheelchairs. Every building should have at least one level entry, accessible to elevators.



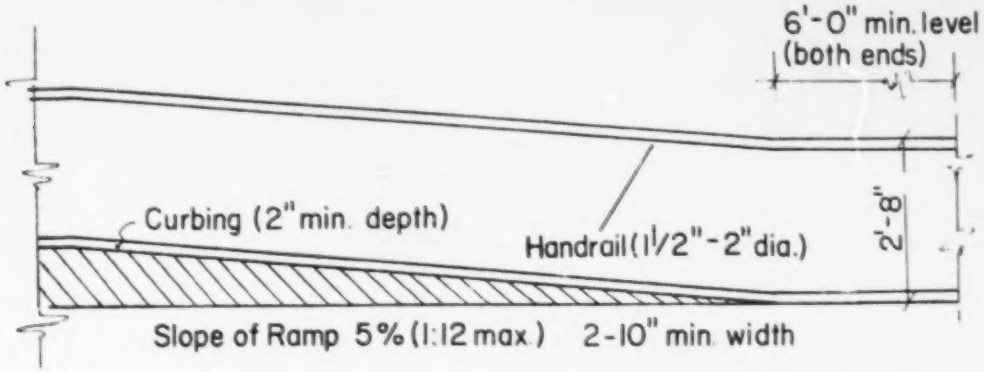
3 STAIRS AND HANDRAILS

Projecting nosings and open risers on stairs are undesirable, since toes tend to catch on them. Risers should not exceed 7" in height. Nosings should be flush with the risers. Handrails should be 2'-8" high and extend 1'-6" or more beyond the top and bottom steps.



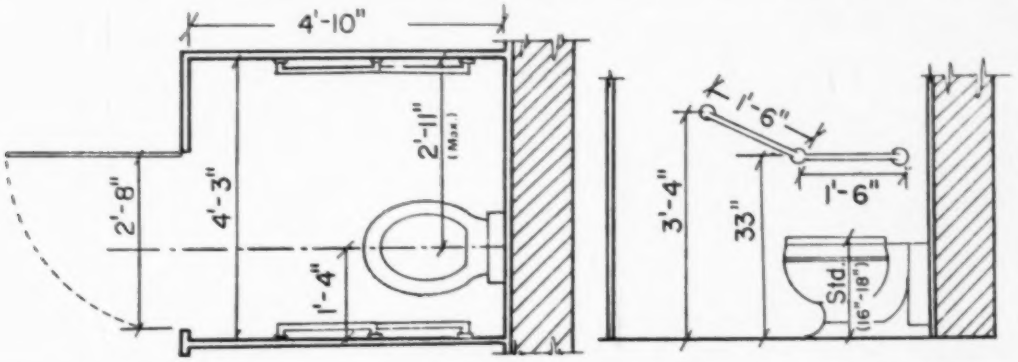
4 RAMPS

When a ramp is necessary, the slope should be preferably 5% or less, but in any event should not exceed 1' of rise for each 12' in length. Ramps should be of non-slip material. There should be level platforms at the top and bottom of the ramps with at least 6' straight, level clearance at the bottom. Curbs, or at least one handrail, should be provided.



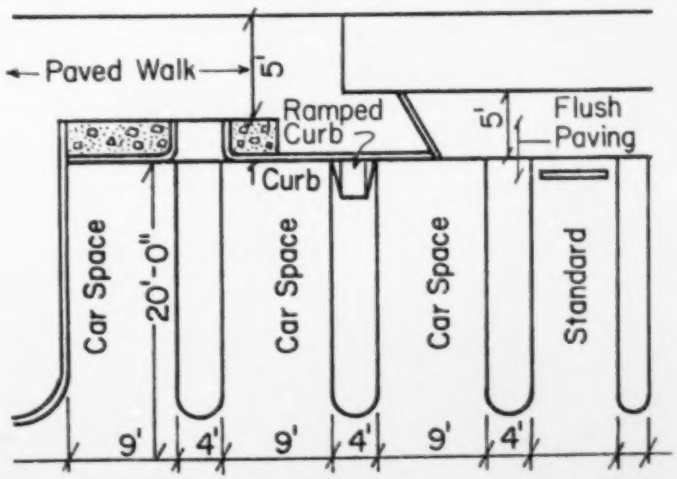
5 RESTROOMS

At least one stall in each major restroom should be wide enough to accommodate a wheelchair inside it (with the door closed) and this stall should have enough space in it to allow a *lateral* transfer from wheelchair to toilet. Otherwise the severely disabled person in a wheelchair will be unable to use it. Mirrors, towel dispensers and shelves should be placed low enough for the wheelchair user. These restrooms should be marked with the *Symbol of Access*



6 PARKING

Parking spaces, marked for the use of the handicapped, should be provided near building entrances to eliminate wheeling or walking behind parking cars. Parking spaces should have level (no curbs or stairs) access from the parking area to the building entrance.



APPENDIX B

DIRECTORY OF TRAILS FOR HANDICAPPED PERSONS

APPEN

DIRECTORY OF TRAIL

Index Number	State	Location**	Na
1	Washington	NAD Park, Bremerton	ur
2	Oregon	Mt. Hood N.F., Zigzag	Lo
3	Oregon	Georgia-Pacific, Mosby Cr. Rd., Cottage Grove	ur
4	Oregon	Willamette N.F., Fall Cr., Lowell	Jo
5	California	Prairie Cr. Redwoods S.P., Crescent City	R
6	California	Muir Woods N.M., Mill Valley	u
7	California	Sunol Park, Sunol	u
8	California	Golden Gate Park, San Francisco	u
9	California	Inyo N.F., Mammoth Lakes	S
10	California	Los Padres N.F., Ferguson Mt. R.A.	F
11	California	San Bernardino N.F., Barton Flats	W

*B-blind; D-deaf; MR-mentally retarded; W-whe

**N.F.-national forest; S.P.-state park; R.A.-

***N.T.-nature trail.

IX

FOR HANDICAPPED

e of Trail***	Type of Handicap*	Comments
itled	B	
t Creek N.T.	W	
itled	B, W	
nny Creek N.T.	B, W	
velation Trail	B	
titled	B	
known	D	
known	B	Existence reported but unconfirmed.
ady Rest N.T.	B, W	
ne Alto N.T.	W	
ispering Pines N.T.	B	

chair

ecreation area; N.P.-national park; N.M.-national monument.

Index Number	State	Location	Name of Trail	Type of Handicap	Comments
12	Arizona	Coronado N.F., Sabino Canyon Vis. Ctr.	Desert N.T. for Handicapped	B, W	
13	Utah	Uinta N.F., American Fork Canyon	Tibble Fork Facility for Handicapped	B, W	
14	Montana	Montana School for Deaf and Blind, Great Falls	untitled	B, D	
15	Wyoming	Yellowstone N.P., Fountain Paint Pot Dr.	Three Senses N.T.	B	Along Firehole Lake Drive.
16	Wyoming	Lions Club Camp, Casper	unknown		Existence reported but unconfirmed.
17	Colorado	White River N.F., Roaring Fork, Aspen	Roaring Fork Braille Trail	B	
18	Colorado	North Jeffco Mt. Pk., Arvada	Mountain Park Braille Trail	B	
19	Colorado	Genesee Mt. Pk., Denver	untitled	B	
20	Colorado	20 miles west of Denver	Stapleton Drive Braille Trail	B	
21	New Mexico	Santa Fe N.F., San Antonio campground, Jemez Rd.	San Antonio Handicap Trail	W	
22	New Mexico	Pecos N.M., near Santa Fe	Ruins Trail	W	
23	New Mexico	Gran Quivira N.M., near Mountainair	Gran Quivira Village Trail	W	
24	New Mexico	Cibola N.F., near Sandia Mt., Albuquerque	La Cienega N.T.	B, W	
25	New Mexico	Lincoln N.F., Cloudcroft	La Pasada Encantada	B	

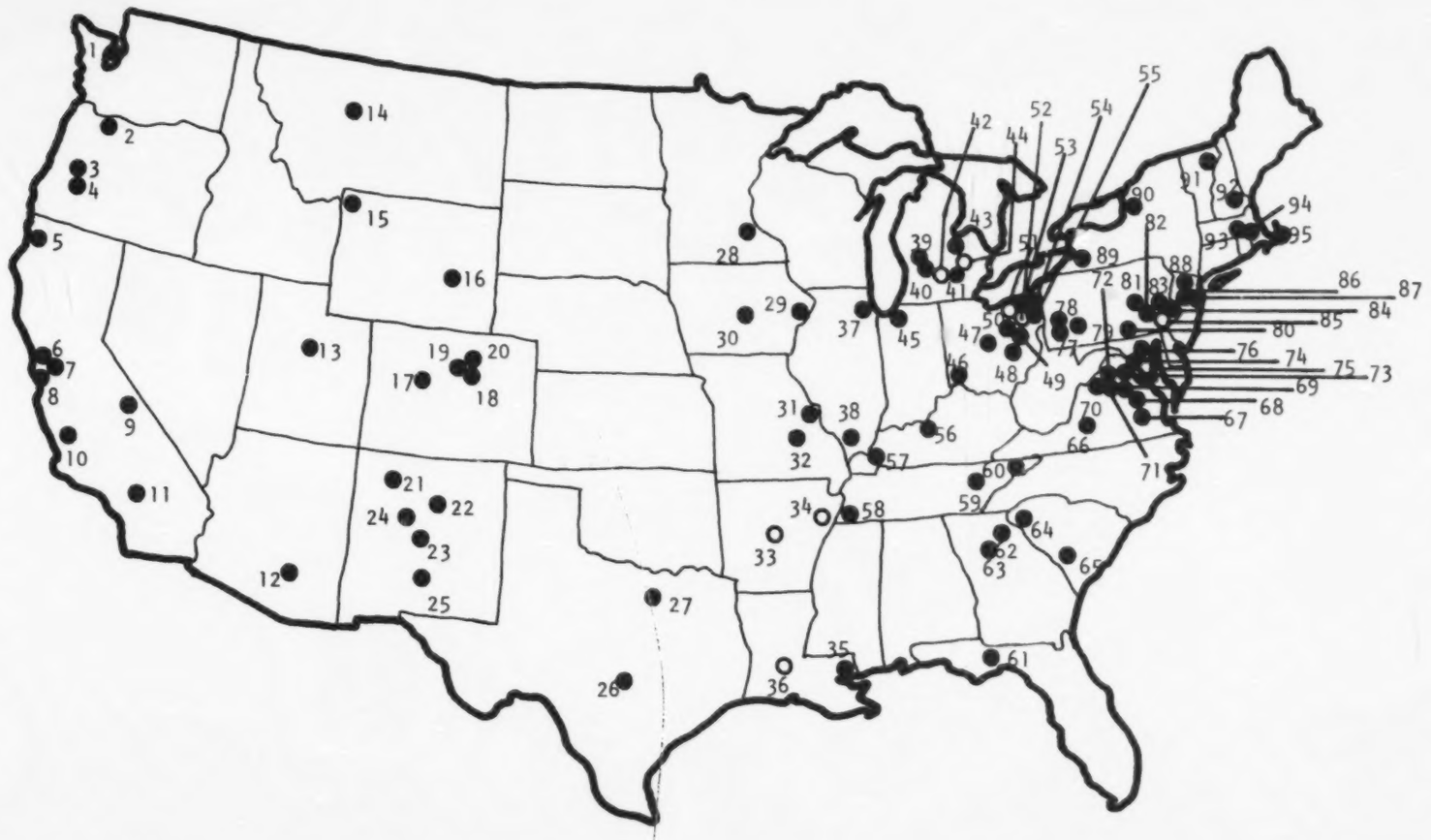
Index Number	State	Location	Name of Trail	Type of Handicap	Comments
26	Texas	Lyndon B. Johnson S.P., near Johnson City	Nature Trail	W	
27	Texas	Fort Worth Nature Ctr. and Refuge, Ft. Worth	untitled	B, W	
28	Minnesota	Woodlake Nature Ctr., Richfield	Blind Trail	B	
29	Iowa	Fairmount School, Davenport	untitled	B, W, MR	
30	Iowa	Margo Frankel Woods S.P., Des Moines	Margo Frankel Woods	W	
31	Missouri	Forest Park, St. Louis	Braille Traile	B	
32	Missouri	Elephant Rocks S.P., Ironton	untitled	B	
33	Arkansas	Pinnacle Mt. S.P., near Little Rock			In planning stage.
34	Arkansas	Village Crook S.P., near Memphis, Tenn.			In planning stage.
35	Louisiana	Southeast Louisiana Hospital, Mandeville	Frank Krevanick Ecology Trail	MR	
36	Louisiana	Chicot S.P., Ville Platte			In planning stage.
37	Illinois	Botanic Garden, Glencoe	Turnbull Woods N.T.	B	
38	Illinois	Giant City S.P., near Carbondale	Giant City Handicapped Trail	W	
39	Michigan	Blandford Nature Ctr., Grand Rapids	Potpourri Trail	B, W	
40	Michigan	Indian Trails Camp, Grand Rapids			Existence reported but unconfirmed
41	Michigan	Fenner Arb., Lansing	Avenue to Discovery	B	

Index Number	State	Location	Name of Trail	Type of Handicap	Comments
42	Michigan	Woldumar Nature Ctr., Lansing			In planning stage.
43	Michigan	Bay City S.P., Bay City	Chickadee Trail	B, W	
44	Michigan	For-Mar Nature Pres. and Arboretum, Flint			In planning stage.
45	Indiana	Bendix Woods, New Carlisle	Whispering Woods Hist. and N.T.	B, W	
46	Ohio	Miami Whitewater Forest, near Cincinnati	Feel of the Forest	B	
47	Ohio	Blacklick Woods Metrop. Pk., Columbus	Blacklick Woods N.T.	W	
48	Ohio	Flint Ridge St. Mem., near Newark	Trail for the Physically Handicapped	B, W	
49	Ohio	A camp 60 miles from Akron	Sunshine Brook N.T.	B	} Accurate location not given; contact St. Pks. and Recr., Columbus
50	Ohio	A camp 60 miles from Akron	Forest Crest N.T.	W	
51	Ohio	North Chagrin Reservation, Cleveland	Arthur B. Williams	B, W	Under construction.
52	Ohio	Rocky River Reservation, Cleveland	Rocky River	B, W	Under construction.
53	Ohio	Brackville Reservation, Cleveland	Harriet Keeler	B, W	
54	Ohio	Highbrook Lodge, Chardon	untitled	B	
55	Ohio	Highbrook Lodge, Chardon	untitled	?	

Index Number	State	Location	Name of Trail	Type of Handicap	Comments
56	Kentucky	Seneca Park, Louisville	Seneca Braille Trail	B	
57	Kentucky	TVA Envl. Ed. Ctr., Land Between the Lakes, near Paducah	Long Creek Walk	B, W	
58	Tennessee	T.O. Fuller S.P., Memphis	Honeysuckle	B	
59	Tennessee	Dan'l. Arthur Rehab. Ctr., Oak Ridge	D.A.R.C. Nature Trail	B, W	May be closed.
60	Tennessee	Bays Mt. Park, Kingsport	Laurel	W, MR	
61	Florida	Apalachicola N.F., Trout Pond, near Tallahassee	untitled	B, W	
62	Georgia	Will-A-Way R.A., Winder	Bird-Berry N.T.	B, W	
63	Georgia	Fernbank Science Ctr., Atlanta	untitled	B	
64	S. Carolina	Clemson University, Clemson	Nature Trail for Blind	B, W, MR	
65	S. Carolina	Barnwell S.P., Blackville	Discovery Trail	W	
66	Virginia	Blue Ridge Parkway, near Roanoke	Handi-Trail	W	
67	Virginia	Petersburg Natl. Battlefield, Petersburg	Trail for the Blind	B	
68	Virginia	Pocahontas S.P., near Richmond	Spillway Trail for the Handicapped	B, W, MR	

Index Number	State	Location	Name of Trail	Type of Handicap	Comments
69	Virginia	Colvin Run Mill, near Annandale	untitled	B	
70	Virginia	Massanutten Mt., near New Market	Lion's Tale	B	
71	Virginia	Massanutten Mt., near New Market	Massanutten Story Trail	W	
72	Virginia	Massanutten Mt., near New Market	Discovery Way	W	
73	Virginia	Gulf Branch Nature Ctr., Arlington	Touch and See N.T.	B, MR	
74	Dist. of Columbia	U.S. National Arboretum, Washington	Touch and See Braille Trail	B	
75	Dist. of Columbia	Rock Creek Nature Ctr., Washington			In planning stage.
76	Maryland	Patapsco S.P., near Baltimore	Nature Trail for the Handicapped	B	
77	Pennsylvania	North Park, Pittsburgh	Braille Trail	B	
78	Pennsylvania	South Park, Pittsburgh	Braille Trail	B	
79	Pennsylvania	Bushy Run Battlefield Pk., in Penn Tnshp.	untitled	B	
80	Pennsylvania	Oerwood Nature Ctr., Mt. Wolf, near York	Braille Trail	B	
81	Pennsylvania	Reading Nature Ctr., near Reading	Marian Hillworth N.T.	B	
82	Pennsylvania	Envl. Ed. Ctr., Nolde Forest S.P., near Reading	unknown	D	
83	Pennsylvania	Churchville Outdoor Education Center, Southampton	Florence Grintz Bittersweet and Braille Trail	B	

Index Number	State	Location	Name of Trail	Type of Handicap	Comments
84	Pennsylvania	Ridley Cr. S.P., near Philadelphia	Epechein Trail	B, W	
85	Pennsylvania	Schuylkill Valley Nature Ctr., Philadelphia			Under construction.
86	New Jersey	Allaire S.P., near Freehold	Allaire Braille Trail	B	
87	New Jersey	Shoal Harbor Marine Museum, Pt. Monmouth	Trail for the Blind	B	
88	New Jersey	Bergen County Wildlife Ctr., Wyckoff	Nature Trail	B	
89	New York	Southern Erie County, near Buffalo	4-H Braille N.T.	B	Contact 4-H agent, E. Aurora.
90	New York	Minna Anthony Common Nature Ctr., Thousand Island S.P., near Watertown	Friendship Trail	B	
91	Vermont	Camp Wapanacki, Hardwick	Nature Trail	B	
92	New Hampshire	Bear Brook S.P., Allenstown			Existence reported but unconfirmed.
93	Massachusetts	Hale Camping Reservation, near Westwood	Cedar Ridge N.T.	B	
94	Massachusetts	Hale Camping Reservation, near Westwood	Spruce Hill N.T.	B	
95	Massachusetts	Cape Cod Natl. Seashore, near Eastham	Buttonbush Trail	B	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Completed trails.
In planning stage or under construction.

NATIONAL PARK SERVICE
PACIFIC NORTHWEST REGION
COOPERATIVE PARK STUDIES UNIT
COLLEGE OF FOREST RESOURCES
SEATTLE, WA 98195

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